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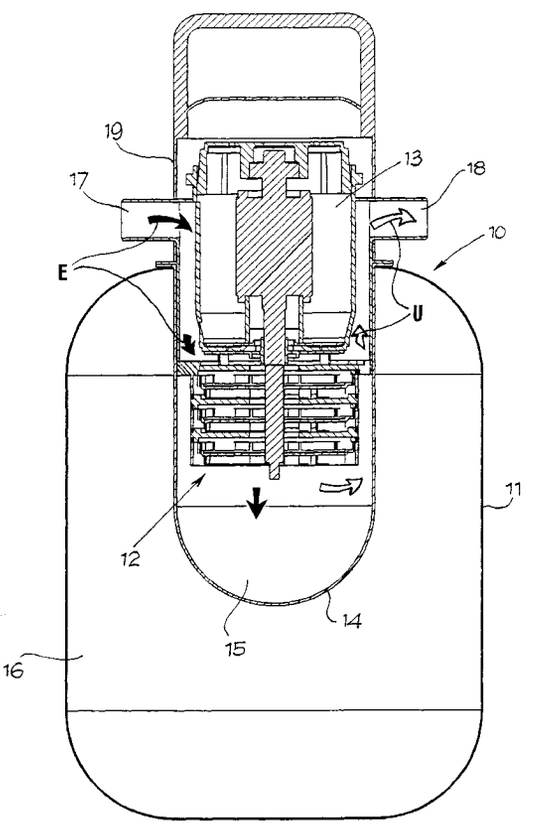
(54) Pump with storage tank

(57) The invention concerns a pump with storage tank called autoclave, where the pump comprises a pump section driven by an electric motor and the tank (11) with an internal membrane (14) which divides it into a first collection chamber (15) for the water and a second chamber (16) containing a compressible gas. The pump section (12) is a multistage centrifugal type and intakes the liquid through an input (17) on the sealed side discharging it directly into the first chamber (15) of the tank, the first chamber being in communication with an output passage (18) to the point of use.



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Description

[0001] The present invention concerns pumps, in particular storage tank type motor driven pumps also known as autoclaves.

[0002] Certain types of pumps usually have a motor driven pump, which is connected to the storage tank by tubes and connections, which however make the unit rather complex, bulky and costly.

[0003] The aim of the present invention though is to supply a pump with a storage tank which is simpler and less costly to make thanks to a new particular device and combination of components and furthermore the elimination of tubes and connections between the pump and tank.

[0004] Another aim of the invention is to make a more compact pump-autoclave unit where the electric motor is cooled by the intake liquid and directed to the tank where the multistage centrifugal type pump operates: the layout being exactly opposite to the normal one used. It intakes from the sealed section and delivers the liquid to the tank creating a pressure; the fluid then being drawn off from the tank for use.

[0005] The advantages of a layout such as this are numerous. Foremost, the suction, which takes place from the sealed section, helps to shorten the distance the liquid has to travel in this phase.

[0006] Secondly, the pump section is always immersed in the liquid in the tank so it is permanently drawing, thus avoiding any inconveniences due to operating without load.

[0007] Also very beneficial and that which forms another innovative characteristic, is the suction placed in line with the output towards the point of use, enabling a handy and fast installation of the unit even in the area under the sink. The suitability of the pump for domestic use is also favoured by the insulating effect the pump being immersed in water has.

[0008] The use of a centrifugal pump instead of self-priming pumps gives the equipment remarkable energy savings compared to normal consumption.

[0009] The pump with storage tank or autoclave proposed here is shown in the rough diagram and given as an example in the only figure in the enclosed drawing and which will be described in more detail below.

[0010] The pump in said drawing is shown as 10 and the storage tank as 11. The pump has a multistage pump section 12 operated by an electric motor 13. Internally, the tank has, as is normal, a membrane 14 which divides it into a first chamber 15 to receive the fluid delivered from the pump section 12 and a second chamber 16 containing a gas which compresses with the increase of the fluid in the first chamber 15 to create the pressure enabling the liquid to be delivered to the point of use when required.

[0011] The pump section 12 and motor 13 are placed in a casing 19 with an inlet passage 17 of the suction liquid and an outlet passage 18 to point of use. The two passages 17, 18 are preferably placed on opposite sides in line with each other and at the same level as the motor 13.

[0012] The pump 10 and the tank 11 are assembled so that the pump section 12 discharges the liquid delivered by the intake passage 17 indicated according to the arrows E directly into the first chamber 15 delimited by the membrane 14 in tank 11. On the other side the first chamber 15 of the tank is in communication with the outlet passage 18 indicated by the arrows U on the drawing.

[0013] The results and advantages are those referred to above.

[0014] Furthermore, in the case of particular requirements the unit can be assembled using an air-cooled motor and with the pump in the autoclave. Lastly, an assembly can be provided with external pump having fixed hydraulic connections in the pump casing without reducing the scope of this invention.

Claims

1. Pump with storage tank called autoclave, where the pump comprises a pump section driven by an electric motor and the tank with an internal membrane which divides it into a first collection chamber for the water and a second chamber containing a compressible gas, characterised by the fact that the pump section (12) is a multistage centrifugal type and intakes the liquid through an input (17) on the sealed side discharging it directly into the first chamber of the tank, the first chamber being in communication with an output passage (18) to the point of use.

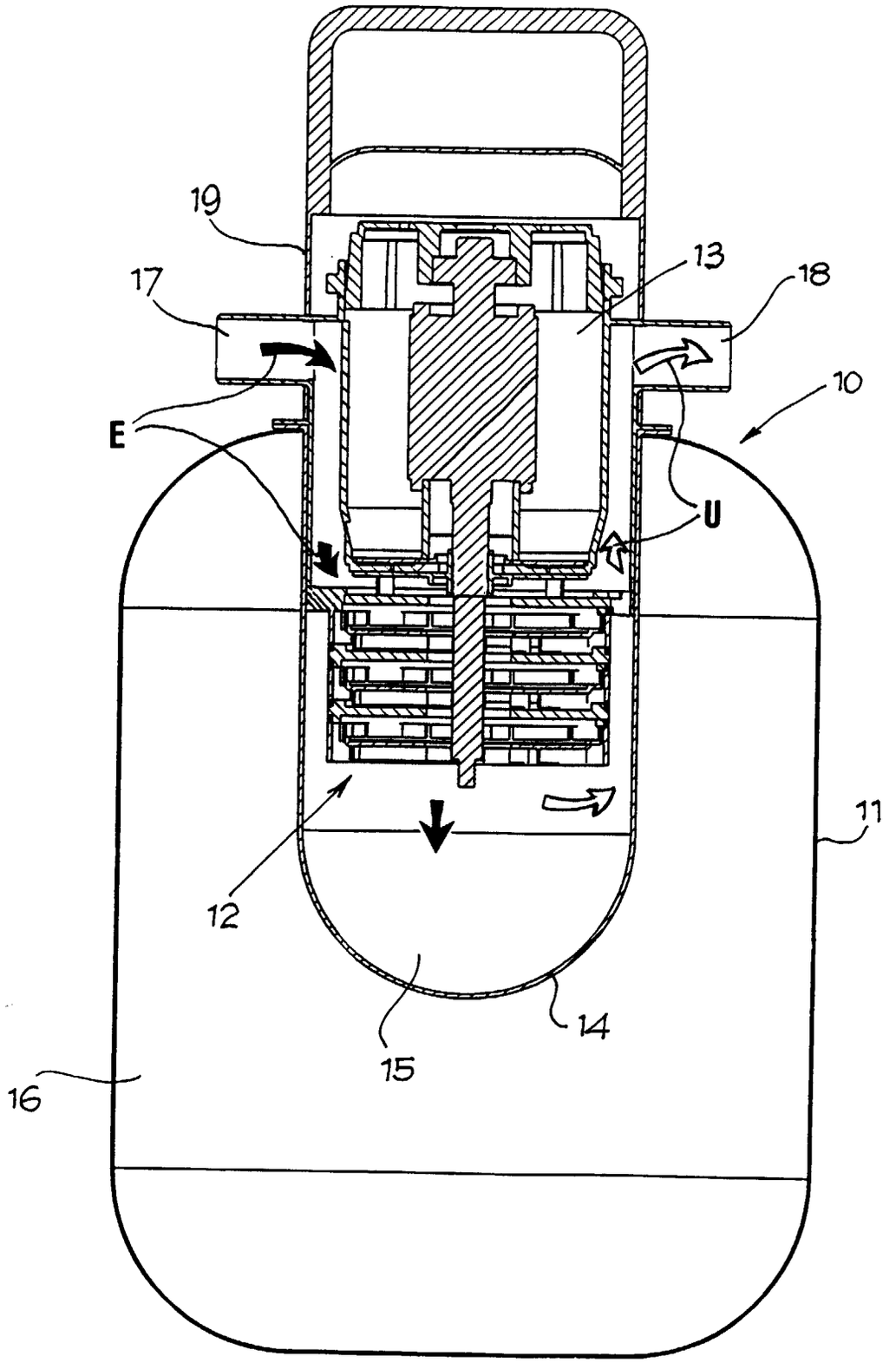
2. Pump according to claim 1, where the pump section and the tank are assembled without connecting tubes or with hydraulic connections in the pump casing

3. Pump according to claims 1 and 2 where the pump section is immersed in the liquid in the first chamber of the tank so as to be permanently drawing.

4. Pump according to the previous claims, where the pump section and drive motor are placed in a casing (19) having the fluid input passage (17) on one side and the fluid output passage (18) on the opposite side in line with each other.

5. Pump according to claim 4, where said input and output passages of the fluid (17,18) are on a level with the motor and the circulating liquid cools the motor.

6. Pump according to claims 1-3 where the motor is air-cooled and the pump is in the autoclave.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